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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/786,244

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Ludger Mimberg

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EXAMINER

BRANDT, MICHAEL J

ART UNIT

PAPER NUMBER

2837

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/786,244	Applicant(s) MIMBERG, LUDGER	
	Examiner MICHAEL BRANDT	Art Unit 2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2, 5-9, 12 and 17-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5742142 (hereinafter Witt) and further in view of USPN 4706180 (hereinafter Wills).

Regarding claims 1, 18 and 23, Witt discloses (Fig. 3) a fan speed controller comprising a PWM generator 22 for generating a PWM signal, wherein an operating frequency of said PWM generator 22 is approximately within the range of 200-1000 kHz (col. 3, lines 27-30), and a drive stage circuit 26, 28, 30 and 32 coupled to the PWM generator 22 and for switch mode converting a supply voltage into a linear voltage for driving a fan, wherein a voltage level of linear voltage is a function of the PWM signal (Abstract, col. 2, lines 56-67, col. 3, lines 1-40 and col. 4, lines 20-38). It should be noted that Witt is related to blower motor for heat and ventilation (col. 1, lines 10-22), i.e. a fan, and further provides that same structure for switching PWM to linear voltage (sinusoidal ripple voltage) (Abstract, col. 2, lines 56-67, col. 3, lines 1-40 and col. 4, lines 20-38).

Witt does not expressly disclose said pulse width modulation generator further for generating a complement of said pulse width modulation signal or wherein said drive

stage circuit further for switch mode converting said supply voltage in accordance with said pulse width modulation signal and said complement of said pulse width modulation signal.

Wills discloses (see Figs. 1 and 2), a PWM controller wherein said pulse width modulation generator 12, 15 and 16 in combination generates a complement D of said pulse width modulation signal C and further wherein said drive stage circuit 12, 15 and 16 in combination for switch mode converting said supply voltage in accordance with said pulse width modulation signal C and said complement D of said pulse width modulation signal.

At the time of invention, it would have been obvious to combine the component generation component of the teaching of Wills with that of the fan speed controller of Witt. The motivation would have been to provide more accurate control and greater controllability within the fan speed controller of Witt. Employing the component in the PWM control of the drive stage circuit allows for quicker and more efficient switching of the component. This is well known in the art.

Regarding claims 2 and 24, Witt discloses an operating speed of the fan (motor) is a function of the voltage level of the linear voltage (col. 2, lines 2-6).

Regarding claims 5 and 8, Witt discloses (Fig. 3) a fan speed controller comprising a PWM generator 22 for generating a PWM signal, wherein an operating frequency of said PWM generator 22 is approximately within the range of 200-1000 kHz (col. 3, lines 27-30), and a drive stage circuit 26, 28, 30 and 32 coupled to the PWM generator 22 and for switch mode converting a supply voltage into a linear voltage for

driving a fan, wherein a voltage level of linear voltage is a function of the PWM signal (col. 2, lines 56-67, col. 3, lines 1-40 and col. 4, lines 20-38). Witt discloses (Fig. 3) a first transistor 26 having a gate for receiving said pulse width modulation signal and a source coupled to a first potential, a current shunting element 32 having a first terminal coupled to a drain of the first transistor and a second terminal coupled to a second potential, a capacitor 30 having a first terminal coupled to the second terminal of the current shunting element, and an inductor 28 having a first terminal coupled to a second terminal of the capacitor and a second terminal coupled to the first terminal of the current shunting element and to the drain of the first transistor.

Regarding claims 6-7 and 19-22, Witt discloses a 33 μH inductor, a 47 μF capacitor (col. 3, lines 19-20), and a difference between a first and second potential of approximately 7 volts (col. 3, lines 18-33). Regarding claims 6 and 21 specifically, all capacitors inherently have an ESR, which is determined as a function of the voltage across the capacitor, i.e. as a function of the first and second potentials.

Regarding claim 9, Witt discloses (Fig. 3) a current shunting element 32 comprising a diode having an anode coupled to the drain of said first transistor 26 and to the second terminal of the inductor 28, and a cathode coupled to said second potential and to said first terminal of said capacitor.

Regarding claim 10, Wills discloses (Fig. 1) a current shunting element 18 comprising a second transistor having a gate for receiving a complement of said pulse width modulation signal C, a source coupled to said drain of said first transistor 19 and

to said second terminal of said inductor 41, and a drain coupled to said second potential 31 and to said first terminal of said capacitor 24.

Regarding claims 12 and 17, Witt discloses (Fig. 3) a fan (motor) coupled across the capacitor 30 where the linear voltage for driving the fan is generated across the capacitor 30 (Abstract, col. 2, lines 56-67, col. 3, lines 1-40 and col. 4, lines 20-38).

3. Claims 3-4, 11, 13-16 and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Witt and Wills and further in view of USPN 6,801,004 (hereinafter Frankel).

Witt and Wills disclose the limitations of claims 1, 8, 12 and 23-24 as noted above, however, do not expressly disclose a thermal sensor coupled to eh PWM generator or a speed sensor coupled to the fan motor.

Frankel discloses (Figs. 1 and 5) a system and method of controlling cooling fan speeds that includes a thermal sensor 116 coupled to the PWM generator 120 (col. 7, lines 1-6) and a speed sensor 116 coupled to the fan motor. Further, the fan motor is feedback controlled based on the signals provided from the sensors (col. 5, lines 47-62). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Witt and Wills with that of Frankel. The advantage of combining the teachings would be to provide an intelligent fan speed control system capable of adjusting the fan motor/cooling system based on the speed of the motor and a thermal temperature of the system.

Response to Arguments

4. Applicant's arguments with respect to all claims except for claim 10 have been considered but are moot in view of the new ground(s) of rejection.

5. Applicant's arguments filed 3/14/2008 have been fully considered but they are not persuasive. Regarding Applicant's contention that Wills, either alone or in combination with Witt, fails to cure the deficiencies of Witt discussed above with respect to independent claim 1 and specifically, that Wills also fails to teach or suggest the limitations of "said pulse width modulation generator further for generating a complement of said pulse width modulation signal" and "wherein said drive stage circuit is further for switch mode converting said supply voltage in accordance with said pulse width modulation signal and said complement of said pulse width modulation signal," Examiner disagrees. See above rejection.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL BRANDT whose telephone number is (571)270-1745. The examiner can normally be reached on Monday through Friday 9:00a.m. - 6:00p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lincoln Donovan can be reached on (571) 272-1988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Mb
/Lincoln Donovan/
Supervisory Patent Examiner, Art Unit 2837